CLASS VIII: Maths

Chapter 2: Linear Equations in One Variable

Questions and Solutions | Exercise 2.1 - NCERT Books

Question 1. Find the value of x : 3x = 2x + 18

Solution:

3x – 2x =18 (transposing 2x to LHS)

X = 18 (solution)

Verification — Put the value of x in the equation to verify our solution

3(18) = 2(18) + 18

54 = 36 + 18

54 = 54

LHS = RHS (so our value of x is correct)

Question 2. Find the value of t : 5t – 3 = 3t – 5

Solution:

5t – 3 – 3t = -5 (transposing 3t to LHS)

5t – 3t = -5 + 3 (transposing 3 to RHS)

2t = -2

t = -1 (solution)

Verification — Put the value of t in the equation to verify our solution

5(-1) – 3 = 3(-1) – 5

-5 – 3 = -3 – 5

-8 = -8

LHS = RHS (so our value of t is correct)

Question 3. Find the value of x: 5x + 9 = 5 + 3x

Solution:

5x + 9 – 3x = 5 (transposing 3x to LHS)

5x – 3x = 5 – 9 (transposing 9 to RHS)

2x = -4

x = -2 (solution)

Verification -Put the value of x in the equation to verify our solution

5(-2) + 9 = 5 + 3(-2)

-10 + 9 = 5 -6

-1 = -1

LHS = RHS(so our value of x is correct)

Question 4. Find the value of z: 4z + 3 = 6 + 2z

Solution:

4z +3 – 2z =6 (transposing 2z to LHS)

4z – 2z = 6 – 3 (transposing 3 to RHS)

2z = 3

z = 3/2 (solution)

Verification — Put the value of z in the equation to verify our solution

4(3/2) + 3 = 6 + 2(3/2)

6 + 3 = 6 + 3

9 = 9

LHS = RHS (so our value of z is correct)

Question 5. Find the value of x: 2x – 1 = 14 – x

Solution:

2x – 1 + x = 14 (transposing x to LHS)

2x + x = 14 + 1 (transposing 1 to RHS)

3x = 15

x = 5 (solution)

Verification — Put the value of x in the equation to verify our solution

2(5) – 1 = 14 – 5

10 – 1 = 14 -5

9 = 9

LHS = RHS (so our value of x is correct)

Question 6. Find the value of x: 8x + 4 = 3 (x – 1) + 7

Solution:

8x + 4 = 3x – 3 + 7 (solving RHS)

8x + 4 – 3x = – 3 + 7 (transposing 3x to LHS)

8x – 3x = – 3 + 7– 4 (transposing 4 to RHS)

5x = 0

x = 0 (solution)

Verification — Put the value of x in the equation to verify our solution

8(0) +4 = 3(0-1) + 7

0 + 4 = -3 +7

4 = 4

LHS = RHS (so our value of x is correct)

Question 7. Find the value of x: x = 4/5 (x + 10)

Solution:

5x = 4 (x + 10)

5x = 4x + 40

5x – 4x = 40 (transposing 4x to LHS)

x = 40 (solution)

Verification — Put the value of x in the equation to verify our solution

40 = 4/5 (40 +10)

40 = 4(50)/5

40 = 40

LHS = RHS (so our value of x is correct)

Question 8. Find the value of x: 2x/3 + 1 = 7x/15 + 3

Solution:

(2x + 3) / 3 = (7x + 45) / 15 (solving LHS and RHS)

15 (2x + 3) = 3 (7x + 45) (transposing 15 and 3)

30x + 45 = 21x + 135 (solving brackets)

30x + 45 – 21x = 135 (transposing 21x to LHS)

30x – 21x = 135 – 45 (transposing 45 to RHS)

9x = 90

x = 10(solution)

Verification — Put the value of x in the equation to verify our solution

2(10)/3 + 1 = 7(10)/15 + 3

20/3 + 1 = 14/3 + 3

23/3 = 23/3

LHS = RHS (so our value of x is correct)

Question 9. Find the value of y: 2y + 5/3 = 26/3 – y

Solution:

(6y + 5) / 3 = (26 – 3y) / 3(canceling 3 at denominator from both sides)

6y + 5 = 26 – 3y(solving brackets)

6y + 5 + 3y = 26 (transposing 3y to LHS)

9y = 26 – 5 (transposing 5 to RHS)

9y = 21

y = 7/3 (solution)

Verification — Put the value of y in the equation to verify our solution

2(7/3) + 5/3 = 26/3 – 7/3

(14 + 5)/3 = (26 – 7)/3

19/3 = 19/3

LHS = RHS (so our value of y is correct)

Question 10. Find the value of m: 3m = 5m – 8/5

Solution:

3m = 25m -8/5

15m = 25m – 8

15m – 25m = -8 (transposing 25m to LHS)

-10m = -8

m = 8/10 or m = 4/5 (solution)

Verification — Put the value of m in the equation to verify our solution

3(4/5) = 5(4/5) – 8/5

12/5 = 20/5 – 8/5

12/5 = 12/5

LHS = RHS (so our value of m is correct)